THE SECOND-WORST JOURNEY IN THE WORLD

(A dog-sledging expedition to Cape Crozier)

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Cover Illustration: *In a Crevasse*, sketched by E. A. Wilson

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INTRODUCTION

Just after midwinter in 1911, following a rollicking solstice party, three men from Captain Robert Falcon Scott's last expedition set off to gather penguin eggs from Cape Crozier, at the eastern end of Ross Island in Antarctica. Fresh embryos were needed to prove the then current theory that the primitive emperor penguin was a link between birds and dinosaurs, and specifically that feathers had evolved from scales. The Emperor penguin is the only Antarctic creature to breed in midwinter: hence the need to travel in the worst conditions the continent has to offer.

The men very nearly died. They travelled the 70-odd miles from Cape Evans to Cape Crozier in almost complete darkness, and in temperatures so cold that their teeth cracked. They lost their tent, essential to keep them alive, in a blizzard, and by a miracle found it again. The voyage is recorded dramatically in "The Worst Journey in the World", written some years later by Cherry-Garrard and regarded as one of the best adventure books of all time[1]. A somewhat more sober account is presented by the diaries of Dr Edward Wilson, the leader of the expedition.[2] Conditions were so bad, and supplies so low, that the men were able to visit the penguin colony only once, and returned with three eggs. Sadly these eggs, for which "three human lives had been risked three hundred times a day, and three human frames strained to the utmost extremity of human endurance",[3] were to do little to advance scientific knowledge.

Wilson and the expedition's third member, Henry "Birdie" Bowers, died the following summer on the way back from the South Pole.

It was 46 years before the emperor penguin colony was visited again[4]. Four men from the New Zealand contingent of the 1957 TransAntarctic expedition – leader Harry Ayres, Dr Ron Balham, Murray Douglas and Neil Sandford – set off on the same journey, but this time in spring. And rather than haul sledges themselves, as Wilson's party had done with nearly fatal results, they took two teams of huskies.

[1] Apsley-Cherry-Garrard, *The Worst Journey in the World*, 1922
[2] Edward Wilson, *Diary of the Terra Nova Expedition to the Antarctic*, 1972
[3] Cherry-Garrard, p.299
[4] In March 1957 Sir Edmund Hillary led an overland party to Cape Crozier to test the Ferguson tractors he was to use for his push south the following summer. The men reached the hill known as The Knoll which towers over the rookery and, using Cherry-Garrard's book as a guide, found the stone hut the 1911 party had built. However they were unable to reach the penguins.

Ayres expedition to Cape Crozier, Mt Erebus in background. Photo by Ron Balham

There are striking similarities between the two journeys. Both parties were held up by blizzards and were able to spend only a tiny amount of time with the penguins. Both expeditions were to some extent experimental, as well as scientific: in Wilson's case a remarkably restrictive diet of pemmican, biscuit and butter in varying quantities was being sampled, while the later party was trying out equipment and gaining field experience for Hillary's subsequent push to the Pole.

And there are of course significant differences. The first party travelled in darkness, in temperatures as low as -75.8˚F (-60˚C). They hauled their sledges themselves and their gear – particularly the reindeer-skin sleeping bags – was hopelessly inadequate for the task: there were times when they became frostbitten lying *inside* their bags.[5] The second party had daylight to travel in, and while they were held up by unexpectedly bad weather and thought at times that their tent might blow away they never suffered anything like the conditions faced by Wilson's men. They had modern equipment and in particular sleeping bags, in contrast to the earlier group's "obstinate coffins".[6] Their sledges were pulled by willing (usually) teams of dogs.[7]

[5] Cherry-Garrard, p255. As C-G pointed out, "Things are getting pretty bad when you get frostbitten in your bag".
[6] *ibid*, p.293
[7] For more on the dog teams see Appendix

Very little has been written about the 1957 voyage to Cape Crozier, which I have called "The Second Worst Journey in the World".[8] But it is interesting for a number of reasons, including the unfavourable conditions which prolonged the time taken for the 50-mile outward journey to ten days, and the training these conditions gave the four men in extreme polar conditions. There is a further point of interest for the writer: Ron Balham was my father.

In this paper I will examine the 1957 expedition to Cape Crozier, and compare it where appropriate to the earlier journey. I will ask why these expeditions were carried out, and whether they achieved their aims; whether scientific discovery was the only purpose of the expeditions; what constitutes scientific success in Antarctica; and whether the criteria changed in the near half-century which separates the two expeditions.

I have been able to uncover a limited amount of material about the 1957 trip, which I will refer to as the Ayres expedition after its leader. I have my father's diary and relevant sections from the diary of Neil Sandford, the only member of the expedition still alive. Conversations with Neil have been very useful. There is reference to the trip in several books and journals about the TAE. And an oral history recording of my father made by the Antarctic Society in 1997 provides a lot of interesting information.

There is of course plenty of information available about the Wilson expedition, the best account still being Cherry-Garrard's book.

The author with an Emperor penguin egg brought back from Cape Crozier by his father, Ron Balham

[8] By this I mean that it was the second such journey, not that it ranked with Wilson's expedition as a test of endurance: there have been many subsequent voyages with a much better claim to that title, not the least of them being the fatal trip back from the South Pole in 1912.

WHY DID THEY GO?

"If you march your winter journeys you will have your reward, so long as all you want is a penguin's egg"[9]

Dr Wilson, alone in his party of three, had visited the emperor penguin colony at Cape Crozier before, as a member of Scott's Discovery expedition in spring of 1903. It was during these visits that Wilson, observing that the penguin chicks had already hatched, realised that emperors must lay their eggs in the middle of winter. By the time of his last visit that year, in late October, most of the bay ice at Cape Crozier had disappeared, and with it the penguins, setting sailing on their own little chunks of ice.

Wilson was able to collect unhatched eggs, but they were spoiled and of no use to prove the suspected link between birds and reptiles. The spring journeys, with temperatures lower than -60˚F (-51.1˚C), had been demanding. "It has been worth doing," Wilson wrote, "but I am not sure I could stand it all again."[10]

Nonetheless, retrieving fresh Emperor embryos was dear to Wilson's heart – perhaps as dear as reaching the Pole was to Scott's – and though he predicted a mid-winter trip would be "a regular snorter"[11], he allowed Scott to persuade him to join the *Terra Nova* expedition of 1910-13. He explained his reasons in his diary.

> "We hoped to be away 6 weeks in the darkest part of the whole year, instead of remaining comfortably in the hut, simply because the Emperor penguins at Cape Crozier laid their eggs, as far as we could judge from what we found out in the *Discovery* days, in June and it was up to me to go and collect some of them to get early embryos – as I have said – for microscopic work. If vestiges of teeth are ever to be found in birds of the present day it will be in the embryos of penguins which the most primitive birds living now, and the Emperor is quite the most interesting of them all, and the most difficult to get at."[12]

Wilson went on to explain his reasons for his choice of man-hauling companions:

> "Travelling in sledges in this way in mid-winter had not been done before, I believe, so it was an experiment of some interest. I had the pick of the whole party, Birdie Bowers and Cherry-Garrard as my companions whom I had chosen and who were allowed to come by the Owner on the condition I brought them back undamaged. They were the pick of our new sledging lot."[13]

"The Owner" is of course Scott, who it can well be imagined was rather nervous about letting his right-hand man and two valued lieutenants depart on such a hazardous and

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[9] Quote by Cherry-Garrard, p.297
[10] King, p.78
[11] Letter by Wilson to his wife, cited in Pimlico edition of *The Worst Journey in the World*, p.lxxiv
[12] Wilson's diary, 27 June 1911
[13] *ibid*

unknown mission. He needed them for his push to the South Pole. But the *Terra Nova* expedition was as much – or almost as much – about science as it was about being the first to reach the Pole[14]. And besides, it is more than likely that Wilson had made permission to go to Crozier in mid-winter a precondition for signing up to the expedition.[15]

Nearly half a century later, the Ayres expedition set off to Cape Crozier for much the same reason: to study the Emperor penguins. However science had moved on and it was no longer a priority to collect embryos (this advance in knowledge, sadly, owing little if anything to the eggs collected by Wilson *et al*). The party was therefore able to travel in less hostile – if still far from pleasant – conditions in spring. Zoologist Ron Balham had specific aims in visiting Crozier.

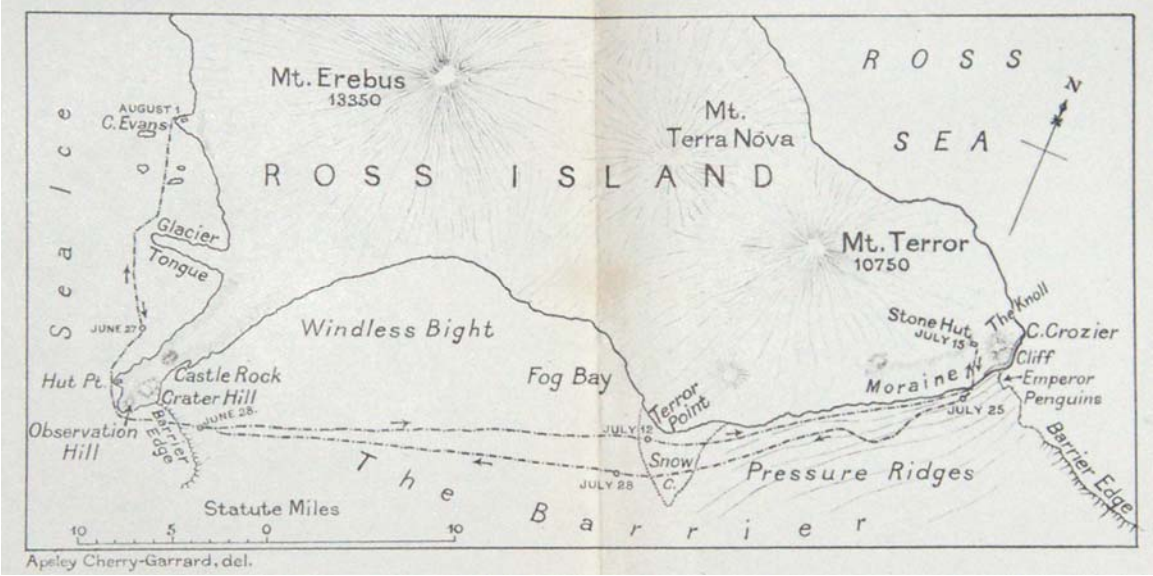
> "We set out to retrace much the same route as Cherry-Garrard had in the middle of winter. We had hoped to spend four or five days with the penguins, photographing and measuring and weighing them and taking sex ratios to see the number of young to get an idea of the state of the colony… we hoped to take blood smears and temperature recordings, trying to work out things such as heat retention, because they do nest in the worst part of the year in the most inhospitable part of the world."[16]

The second reason for the trip was more prosaic. The winter months at Scott Base had been spent in large part modifying gear in preparation for the summer journey towards the South Pole, and Hillary was keen to put men and equipment to the test. Several spring journeys were carried out, including a group with dog teams attempting to find a way up the Ferrar Glacier and then surveying up the western coast of McMurdo Sound; a tractor journey along a similar route by Hillary, Peter Mulgrew and others; and a party with yet another dog team setting off up the nearby Blue Glacier.

[14] See, e.g., Charles Wrights' comment on page 23
[15] King, p.82
[16] Antarctic Society oral history recording, Ron Balham, 1997

TO CROZIER

"We kept our tempers, even with God"[17]



The route to taken by both parties to Cape Crozier. Ayres and his men started from Scott Base, near Crater Hill. GCAS X camped at Windless Bight. Map from Cherry-Garrard, 1922

Harry Ayres, Ron Balham, Murray Douglas and Neil Sandford set off for Cape Crozier on the morning Saturday 14 September 1957, with two teams of nine dogs pulling sledges.[18] The men made a good field team. Ayres, at 44 one of the oldest men on the TransAntarctic Expedition, was senior guide at Franz Josef Glacier, and an internationally-famous mountaineer. He had taught Ed Hillary to climb in the Southern Alps some nine years earlier. "I learned a lot from Harry," said Hillary in his book *High Adventure*. "I learned a little of that subtle science of snow and ice craft that only experience can really teach."

Murray Douglas was also a very experienced mountaineer, and had been assistant chief guide at The Hermitage at Mt Cook before being selected. A typical TAE all-rounder, he was also chosen to be a mechanic and tractor-driver.

Ron Balham had long wanted to go to Antarctica: his heroes were "the boys down there".[19] He had qualified as a meteorologist before the war, and spent the war years as a "coast-watcher" on the sub-Antarctic islands, scanning the horizon for the Japanese or German ships it was feared would attack New Zealand from the south. No ships were

[17] One of Cherry-Garrard's most memorable lines, on returning half-dead from Cape Crozier. Cherry-Garrard, p. 297

[18] Like Wilson's men they left after a party: Ed Hillary, whose bedroom opened off the mess hut was away and so they were able to play Beethoven, loudly. A bottle of something called "Old Methus" was consumed, and Balham did not get to bed until after three. Balham's diary, September 13 1957

[19] Antarctic Society oral history recording, Ron Balham, 1997

ever seen, of course (apart from an American Liberty ship spotted by Balham), but he so thoroughly enjoyed the experience that he volunteered for a second year-long tour of duty, despite isolation and severe weather conditions. One of his mentors in the sub-Antarctic was Dr Robert Falla, later the director of the Dominion Museum, who introduced him to zoology and in particular the study of birds. The techniques of the day appear peculiar now – if a rare bird was seen it was immediately to be killed and carefully stuffed for a museum – but it was the start of a life-long interest for Balham. By the time he was selected as meteorologist and biologist for the TAE he had completed a PhD at the University of Missouri, studying waterfowl in the wilds of Canada. Falla, incidentally, was on the selection panel for the TAE, an undoubted advantage to Balham.

The fourth member of the party, Neil Sandford, was an IGY technical officer, whose duties included maintaining and operating the panoramic ionosonde and the pulse transmitter. "Born at an early age" in Raetihi[20], he was a keen outdoors-man, and a radio technician with useful experience in search and rescue operations.

After picking up supplies from a depot they'd laid eight miles along the route two days previously – presumably for sledging practice, as this manoeuvre makes little sense otherwise – each of the sledges weighed some 700lbs. This was about 50lb *less* than the weight Wilson, Cherry-Garrard and Bowers were man-hauling on their two sledges.

The first day's sledging went well, with the dogs maintaining a good pace up onto the Barrier – as the Ross Sea ice shelf was then known - and pulling steadily. However from 1745 hours Balham records whiteout conditions and snow. The men turned in after a dinner of pemmican (about which more later) fortified with mashed potatoes, currants, dried onions and curry, followed by a dessert of chocolate, tea, biscuit and butter. More fortification was provided by 1/8 of a pint of brandy. They had travelled some 15 miles from base.

Ominously, a blizzard – or "blizz", in Antarctic jargon – was forecast for Hutt Point. The men stayed in their camps the next day, "after a great deal of discussion as to [whether to] go on or not".[21] The blizzard did not arrive, but the snow surface was poor. Meanwhile the tent began to ice up inside, up to 15 inches from the bottom: this was a continual hazard from cooking steam freezing, and was to get much worse as the journey went on.

The following day the party pressed on, but the going was slow. They had arrived at Windless Bight, an area of the ice shelf to the south of Ross Island which, as its name suggests, is sheltered from the prevailing winds.[22] While this provides welcome relief from blizzard conditions, it also means that the deep soft surface snow is not blown away, making for difficult sledging. Balham records the dogs "making very heavy weather of it", and down to 1½ miles per hour – as against 6-8 mph on sea ice. "The surface is a killer," he wrote, "and we probably didn't make any more than 6 miles". Temperatures were down to -21˚F (-29˚C), and conditions were approaching whiteout – so much so that

[20] Email from Neil Sandford,, February 10 2008
[21] Balham's diary, September 15 1957
[22] This makes it an ideal location for the GCAS field trip to camp

when the sky cleared briefly the party found itself heading due south towards White Island, some 90˚ off course. Balham records despondently that three days out the party was only 20 miles from camp, and notes that he is reading Cherry-Garrard's "The Worst Journey in the World".

Cherry-Garrard's party had experienced much the same problems at Windless Bight, with the added difficulties imposed by darkness, extreme cold, and hauling their sledges themselves.[23] They sank two or three feet into snow as soft as sand[24], and they could not pull the two sledges in tandem: rather they had to relay them one sledge at a time, travelling three miles for each mile's progress. On July 5, ten days out from Cape Evans, they pulled heartily for eight hours, and made a heart-breaking 1½ miles progress. At the last moment they had left their skis at Cape Evans, something they were no doubt regretting.

And it was cold. Wilson, never one to overstate difficulties, writes in his diary that the moment he left the tent his clothes were frozen stiff "into a sort of tin mail… any climbing up ropes or out of crevasses becomes exceedingly difficult for anyone but an acrobat".[25] Cherry-Garrard, after recording a night-time temperature of -75.8˚F (-60˚C), notes he was convinced that Dante was right to place the circles of ice below the circles of fire [in his *Inferno*],[26] and comments that there were times when death in a crevasse would have been a blessing.

Cherry-Garrard had become frostbitten almost immediately. On the second day out he removed his gloves to haul on a sledge rope ("I was a fool")[27], and all ten fingers froze within seconds, painful blisters rising that night. (Balham experienced the same thing when digging a hole for a "deadman" to secure the huskies. "The speed with which my fingers go is alarming," he wrote. "Sheer agony.")[28]

For a few hours on the morning of July 3 temperatures rose to a comparatively warm - 27˚F (-33˚C). This allowed the men, frostbitten and exhausted, to rest for a while in their tent, "and get thoroughly thawed, and wet, and warm"[29] inside their sleeping bags. Cherry-Garrard wrote that this was a great relief, even though he knew that the now thoroughly saturated bags would be worse than even when they refroze.

Worse was to come, however: blizzards. Once out of the shelter of Windless Bight both parties were exposed to the full blast of the Antarctic wind.

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[23] *cf* Hillary's comment in his book *No Latitude for Error* that the deep snow at Windless Bight has "always been something of a hurdle on the way to Crozier" (p.92)
[24] Cherry-Garrard, p.244
[25] Wilson's diary, July 4 1911
[26] Cherry-Garrard, p.249
[27] *ibid*, p.236
[28] Balham's diary, 24 September 1957
[29] Cherry-Garrard, p.247

After a few stop-start days of travelling and layovers caused by whiteouts Ayres and his men had a good day on 18 September, sledging for eight hours on the now wind-blown and icy surface. In the afternoon the Auster, the smaller of the TAE's two planes, flew overhead on its way to reconnoitre Cape Crozier. The plane landed alongside them on its way back, and pilot John Claydon reported he thought he could see Emperor chicks. He also reported the sea ice had gone out, making it more difficult to reach the birds.

The wind continued to rise during the day, and was strong enough at times to blow them along on their skis. When they made camp as a precaution all four men erected each tent, instead of the usual two. They had reached the pressure waves caused by the ice shelf hitting Ross Island, and though they didn't realise it at the time were camped with the tents either side of a "slot", or crevasse.

Overnight the wind got worse, meteorologist Balham estimating its force at 60 knots gusting to 80. His diary records his increasing anxiety as the storm worsens outside.

> "As a precaution we are sleeping dressed & I have my essential windproofs, down clothing, gloves & footwear either in my bag, under it, or tied to it. At least they will not be blown away. Am sleeping in my down jacket and have the pants as a pillow… God, I hope the tent holds.
>
> 2.30 am. If anything it is getting worse with the wind tearing at the tent which is flapping with cracks like rifle shots. We are getting a proper dusting and I am apprehensive as to the outcome of this."[30]

Losing a tent in such conditions was very likely to be fatal: the flimsy structure of bamboo and canvas provides a remarkable degree of shelter from even severe gales. The tents Ayres' party was using were essentially the same as Wilson's, and were able to withstand even severe Antarctic conditions[31]. Nonetheless, this blizzard was testing the tents to their limits.

The blizzard raged for the next two days. At some point the weight of the snow piling up on the side of the tent snapped one of Balham and Ayres' tent poles, adding to their concerns. The tent was also icing up badly and getting smaller inside as the snow piled up, the 6' Balham now having to sleep curled up (Ayres, who was shorter, suffered no such discomfort). And the howling wind and flapping of the tent sides were loud enough to drown out even the hearty roar of the primus.[32]

The combination of whiteout and wind meant they were unable to reach their companions in the other tent, though it was only feet away. Ayres at one stage lashed himself to the alpine rope and tried to reach them but the rope was three feet too short, and he was

[30] Balham's diary September 18 1957
[31] The Scott polar tent, as it is known, has barely changed in more than 100 years. It is a simple design, easy to put up even in high winds and very stable, with four centrally-hinged bamboo poles and an external apron on which snow is piled to anchor the tent. Even tall people can stand up in it.
[32] Conversation with Neil Sandford

forced to turn back. Sandford, meanwhile, recorded in his diary much the same concerns about his tent – which was now "a peculiar shape" - blowing away.

Each team had to emerge periodically to check on the dogs and feed them. The dogs were quite unconcerned by the conditions, curling themselves into tight balls under an insulating layer of snow. But there was some danger of them lying on their chains, freezing in and being unable to move; hence the need for regular checks.[33]

Another problem was beginning to emerge. It was necessary to keep the primus going after cooking to warm the tent and dry out soaking clothes – but the men were going through fuel at an alarming rate. Balham estimated their ten-day fuel tin would last perhaps eight days. To run out of fuel – necessary for melting water, as well as for cooking and heating – would be serious indeed. The party was seven days out from base, and still had not reached Cape Crozier.

By the time blizzard cleared the men were seriously thinking about turning back, as Sandford records in his diary:

> "As the ice has gone out in the bay looks as though getting to the rookery may be difficult and in view of the damage to their tent we may be forced to return as soon as it clears. It is a disappointing prospect as was looking forward, I know we all feel this way, to seeing the penguins at close quarters and having to spend all this time prostrate at the foot of an unclimbed [by us] mountain.."[34]

However the decision was made to press on, Ayres and Douglas having shown some resource in repairing the broken tent pole with an ice axe and two ski poles.

[33] Antarctic Society oral history recording, Ron Balham, 1997
[34] Sandford diary, 20 September 1957

Ayres and Douglas repairing broken tent pole (photo courtesy Neil Sandford)

The party was now approaching the Knoll, the hill towering some 800 feet above the Emperor Penguin rookery at Cape Crozier. They found themselves encountering the opposite problem from the deep sandy surface at Windless Bight: the snow was so slippery, and the gradient so steep, that the dogs were struggling to make traction, even with the men pushing the sledges as well. Cherry-Garrard had described the hard-packed icy snow at the same spot as being "as polished as the china sides of a giant cup which it resembled".[35]

The 1957 party was keen to make it to the top of the slope because they wanted to find the famous stone hut which Wilson, Cherry-Garrard and Bowers had built there. But winds were reaching 30 knots, the dogs were being blown off their feet "like washing on a line"[36], and even one of the sledges was blown over. Eventually the decision was made to turn back. This, though, was not without its difficulties, as Ron Balham records:

> "Surface icy. Had to turn back. Dogs couldn't make it up the glazed slope. Great trouble turning them. I crept forward and led the lead dog Bonzo. The trace slackened, and the others bunched up. There was a fight and I was in the middle with the main trace wrapped around one leg and harness traces around the other. Lucky they didn't take off downhill then 'cos I would never have been able to get

[35] Cherry-Garrard, p.260
[36] Balham diary, 21 September 1957

> out and hard surface would have been rough on me. A fang just grazed my hand during the fight."[37]

They dropped back some three miles and pitched camp – this time placing the tents side by side, and building a low wall of snow blocks to break the wind. Then, with their goal frustratingly within sight, followed yet another lay-up day, as the wind was too strong to move. By this time the men were nursing badly-blistered feet and heels ("those bloody high-altitude boots," complained Balham in his diary),[38]

Finally on Monday 23 September, ten days after setting out, the men arrived at Emperor rookery. They had a somewhat easier time of reaching it than Wilson's party, which became entangled in the dark in the 60'-high pressure ridges which abut the foot of Cape Crozier and block access to the penguins.

Almost 50 years later the ice shelf edge seemed to have moved several miles to the north, making the journey along the base of the cliffs somewhat easier. They were the first since Wilson's party to set foot among the Emperor penguins at Cape Crozier.

But, like Wilson, Balham had frustratingly little time to study the birds. The expedition was now so far behind schedule that they had to turn back the following day, and Balham had only two and a half hours at the rookery instead of the four or five days he had hoped for. Intentions of banding penguins, taking blood smears, temperature readings, and extensive observations had to be abandoned. Nonetheless, the time at the rookery was not wasted. Many photographs were taken, showing the extraordinary density of the penguin population.[39] Balham estimated the population at 7-800 birds in the main group, though there was not time to check another group of birds at the eastern end of the colony. Pilot Claydon reported a further group of some 200 away from the colony. By the time of Balham's visit all the eggs had hatched, and he estimated one bird in three or four (and in some parts of the colony one in seven) had young, most of them around three weeks old.

[37] *ibid*
[38] *ibid* ,24 September
[39] Emperors huddle together to keep warm, taking turns to shuffle to the outside of the pack to bear the brunt of the cold

Emperor penguins with chicks at Cape Crozier (photo courtesy of Neil Sandford)

Some birds without chicks were seen battling so fiercely to acquire the young of others that the objects of their attention were torn to pieces.

> "[These birds], probably sub-adults, not having attained the three or four years required for parenthood, did however take part in the fierce competition of claiming a chick, which might for a moment appear to be without a guardian. It is probable that the greater part of the infant mortality was caused by this fighting for possession of the young. The proportion of unemployed birds varied from one in four to one in eight in different parts of the colony."[40]

Like Wilson before him Balham returned with three Emperor penguin eggs, as well as a series of dead chicks and three live ones.

As for Wilson's party, by the time they reached Cape Crozier matters had got progressively worse. Much has been written about the hardships they faced: the frostbite, the plunges into crevasses, the agony of spending half an hour forcing their way into frozen sleeping bags, the long hours spent once inside them shivering until they thought their backs would break.[41] Everything was made more difficult – and immeasurably more depressing – by the conditions of pitch darkness, or at best a sort of twilight gloom. They had finally arrived at the Knoll 19 days after leaving Cape Evans, and had built a stone hut with a canvas roof just on the lee-side of a ridge. This was to be a sort of field

[40] Balham quoted in TransAntarctic Expedition Ross Sea Committee Newsletter No. 20, 1 October 1957
[41] *ibid,* p.241

laboratory for pickling penguin specimens, and a cosier home than the two-man tent the three of them had been living in. The hut was named Oriana, after Wilson's wife.

An entire day was spent trying to reach the Emperor penguins. The men found themselves trapped in 60-ft high pressure ridges. "Four hundred miles of moving ice… had just tossed and twisted those giant ridges until Job himself would have lacked words to reproach their Maker," wrote Cherry-Garrard, with feeling. Though they could hear the penguins they could not reach them, and eventually retreated.

The following day they took a different approach, climbing straight down a 200-foot ice cliff in the dark. Neil Sandford, having seen the route they took, describes the descent as "mind-boggling". Wilson and his men had finally arrived at the Emperor penguin colony, and immediately set about gathering the prize for which they had come: eggs containing early embryos.

The ice cliff down which Wilson's party descended to reach the rookery. (Photo courtesy Neil Sandford)

Wilson noted with interest that there were fewer than 100 penguins at the rookery, compared with the 2,000-odd he had found in September 1902. Many of the penguins were incubating eggs on their feet, the first time this had ever been observed. Wilson was also fascinated to see that some penguins without eggs were sitting on egg-shaped pieces of ice, which they would yield immediately if offered a real egg.

Penguins at Cape Crozier, with the Barrier in background. Etching by E.A. Wilson

The men collected five eggs of their own[42] and set off back to camp, not realising this was the last time they would visit the penguins. Sometime in the night of Friday 21 July the tent, which had been pitched outside the hut, blew away. The next day – Wilson's birthday - the canvas roof of the hut was torn to shreds, leaving the men without shelter. "Quite the funniest birthday I have ever spent," Wilson wrote in his usual laconic way.[43] Cherry-Garrard, again characteristically, took a gloomier view. "I can well believe that neither of my companions gave up hope for an instant," he wrote. "As for me I never had any hope at all… without the tent we were dead men."[44]

The three spent a day in their sleeping bags within the roofless walls of their hut, covered with snowdrift which at least kept them warm, though it also made them – if this was possible – wetter still. And then, miraculously, the following day Bowers found the tent on a slope some half a mile away. It had gone up "closed like an umbrella", which had probably saved it being torn apart by the fierce winds, and was almost undamaged. "We were so thankful we said nothing," wrote Cherry-Garrard.

This had been the last straw, though, and Wilson decided to return without another attempt to reach the penguins. His frustration at leaving after so little scientific work can only be guessed at, though it would certainly have been understood by Balham and his party. Cherry-Garrard wrote in a pained way:

[42] The two eggs carried by Cherry-Garrard were broken as he stumbled, hampered as always by poor eyesight. They immediately froze
[43] Wilson's diary, 23 July 1911
[44] Cherry-Garrard, p.280

> "After indescribable effort and hardship we were witnessing marvel of the natural world, and we were the first and only men who had ever done so; we had within our grasp material which might prove of the utmost importance to science; we were turning theories into facts with every observation we made, - and we had but a moment to give".[45]

So ended "the weirdest bird's-nesting expedition that has ever been or will be".[46]

[45] *ibid*, p.268
[46] *ibid*, p.234. Though of course Wilson's expedition had not ended: the men had still to get back to Cape Evans, which they eventually did after much hardship on 1 August 1911 after 36 days in the field. Scott's reported comment on their return was "You know, this is the hardest journey ever made."

DISCUSSION: WAS IT WORTH IT?

And so we have two scientific expeditions to Cape Crozier to study Emperor penguins, almost half a century apart. One very nearly cost three men their lives. The other was less life-threatening, but still hair-raising. Neither party was able to spend more than a couple of hours with the penguins, despite their enormous efforts. Was it worth it?

This question is perhaps more complicated than it at first seems. If one looks merely at the empirical increase in knowledge of Emperor penguins which these expeditions provided they can probably be judged failures. However if one takes different factors into account - other knowledge gained, the specific conditions of scientific work in Antarctica, the socio-political atmosphere of the times, even the effect on the scientists themselves – the expeditions begin to seem rather more successful.

To begin with the pure science: Wilson had set out with a very specific goal in mind. He had been influenced by the work of German biologist and philosopher Ernst Haeckel, who had developed the Darwinist theory of a "biogenetic law". This held that as an animal goes through its embryonic stages it repeats its evolutionary history. Thus a study of the embryos of Emperor penguins, then thought to be the most primitive of birds[47], would reveal the origin of birds and their relationship to other vertebrates, particularly reptiles. The clearest indication of this would be if the embryos provided evidence of putative teeth, or of scales evolving from feathers.[48]

Sadly, Wilson's Emperor penguin embryos did little to advance the argument either way. To begin with, they turned out to be older than he expected, and thus too well-developed to test Haeckel's theory. Then, the scientific establishment back in London treated the eggs with a mixture of incompetence and indifference which made a mockery of the efforts made to collect them. Cherry-Garrard delivered the eggs to the Natural History Museum on his return. He writes an entertaining account – one senses with gritted teeth – of his encounter with a Chief Custodian, "extraordinarily offensive even for an official man of science"[49] who paid him no attention at all, not even thanking him for his precious donation and only grudgingly yielding a receipt.

Matters did not improve. The eggs were entrusted to a Professor Assheton, who died before he could examine them. They then passed to Professor Cossar Ewart of Edinburgh University, whose interim report, published at the back of Cherry-Garrard's book, finds no link between scales and feathers. The report finishes with the kind words that "if the conclusions arrived at with the help of the Emperor Penguin embryos about the origin of feathers are justified, the worst journey in the world will not have been in vain."[50]

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[47] It is now held that flightless birds evolved from those which could fly, suggesting the penguin is far from the earliest form of bird

[48] The biogenetic theory was in fact becoming discredited at about the time of the *Terra Nova* expedition (Wheeler, p.107)

[49] Cherry-Garrard, p.299

[50] *ibid*

But Cossar Ewart also died before finishing his work. Many years later Dr C.W. Parsons published the official results of the studies of the embryos, concluding that they had "not added greatly to our knowledge of penguin embryology."[51]

Wilson himself, according to fellow expedition member Tryggve Gran, considered the journey to have been "fruitless as regards the study of penguins".[52]

Similarly, Balham was able to discover little about Emperor penguins in the two and a half hours he had to work with them. He made some observations, recorded above, which were useful; but nothing was learned which could be said to advance understanding of the birds to any extent.

From a strictly scientific point of view, then, neither expedition can be held to be a success. But other things were learnt from both. The Ayres expedition was one of several spring journeys designed give more practice to the men and dogs of the TransAntarctic Expedition, and find out how equipment modified over winter would stand up to field conditions.[53] Seen in this light it emerges more favourably. All four men certainly learnt useful lessons about surviving in blizzard conditions in Antarctica, even the two experienced mountain guides. They also learnt, rather quickly, some of the finer points of dog handling. Balham was to drive a Ferguson tractor part of the way to the Pole with Hillary only three weeks after returning from the Crozier trip: the experience he had gained of field conditions can only have been helpful[54].

L.B. Quartermain, in the Ross Sea Committee Newsletter, writes that "The Cape Crozier Party is hesitant in claiming that their journey was a good one, but like all the other spring trips it was a successful one".[55] Neil Sandford says that he did not regard the trip as a failure, though he was disappointed not to be able to climb Mt Terror as he had hoped.[56]

Minor modifications to equipment were being made all the time. For example Sandford writes in his diary that he made a windproof cover for his balaclava, modified his anorak with a front zip and a hood extension, and changed the tapes on his windproof trousers so that they could be tied instead of twisted.

Similar sorts of modifications to equipment were made by Wilson's party. Like Sandford, Cherry-Garrard sewed extensions onto his own balaclava (the resulting garment can be seen at the Canterbury Museum). "We spent a long time with our housewives [sewing kits] before this and other trips," writes Cherry-Garrard, "for everybody has their own ideas as to how to alter their clothing for the best. When finished some looked neat, like

[51] Wheeler, p 161
[52] *ibid*, p.119
[53] Helm and Miller, p.223
[54] Indeed it stood him in good stead in later life. He was able, for instance, to cook breakfast on family camping trips without getting out of his sleeping bag
[55] TransAntarctic Expedition Ross Sea Committee Newsletter No. 20, 1 October 1957
[56] Conversation with Neil Sandford, 13 February 2008

Bill: others baggy, like Scott or Seaman Evans: others rough and ready, like Oates and Bowers: a few perhaps more rough than ready, and I will not mention names."[57]

These are all trivial matters, perhaps, but this is exactly the way that advances in field equipment are made. A good example is sleeping bags. Wilson's party's reindeer skin bags did not breathe, and trapped moisture which froze solid the moment the bags were vacated: fighting one's way back into them could take half an hour. This made for a hellish night's rest: "The day's march was bliss compared to the night's rest, and both were awful", wrote Cherry-Garrard.[58] Those awful nights were an excellent means of product testing, though, and by the time Ayres and his men travelled to Cape Crozier sleeping bags had been greatly improved. They were made of down, and breathed. Neil Sandford's sleeping bag had gained 1lb of weight from accumulated moisture when he returned from Cape Crozier: those of Wilson and his men are said to have gained between 20 and 30 lbs.[59]

By the same token, these most extreme of conditions proved the worth of some types of equipment, which remained essentially unchanged for decades. The primus stove is a good example, the Scott polar tent another. Even pemmican[60], loathed by most who ate it, was made to the same basic recipe for some 100 years (it was up to its unwilling consumers to make it more palatable with the addition of whatever supplements they could muster).

In fact Wilson's party was experimenting with diet, at the request of Scott. The men took nothing with them but pemmican, biscuit, butter and tea, and consumed each in different proportions. Bowers ate only biscuit and pemmican, without butter, where Wilson, who was convinced of the value of fat, tried to eat 8oz of butter a day. Cherry-Garrard began without butter, but found he missed it and traded some of his extra biscuit for the butter Wilson found he could not eat.[61]

The dreariness of this diet can only be imagined, though Cherry-Garrard maintains the pemmican, from Beauvais, Copenhagen, was excellent, and the biscuits, specially made by Huntley & Palmers from a recipe worked out by Wilson and a chemist, were "the most satisfying ever made".[62] This could of course reflect what every tramper knows: that even the most uninviting meals taste wonderful in the outdoors after a day of hard exercise. But useful observations were made. Cherry-Garrard found that he suffered more from frostbite when he wasn't eating butter.[63] And while Wheeler claims that nobody

[57] *ibid*, p.288
[58] Cherry-Garrard, p.296
[59] Conversation with Neil Sandford, 13 February 2008
[60] Pemmican was originally made by North American Indians, and consists of more or less equal quantities of ground meat and fat in a sort of cake. Neil Sandford says he never heard anyone say they liked it, and describes it as gritty and likely to cause heartburn; Ron Balham said he would add anything he could find to it to make it edible: dried egg or onions, curry powder, sultanas etc. It was also fed to dogs
[61] Wilson's diary, 11 July 1911
[62] Cherry-Garrard, p. 257
[63] *ibid*

learnt much from these experiments with food[64], the fact that the men survived in such appalling conditions reinforced the nutritional value of pemmican and biscuit. Indeed, these two items still made up the bulk of the field diet during the TransAntarctic Expedition and even later.

There are further factors to take into account when considering the success or otherwise of the expeditions. One is the nature of Antarctic science itself. Especially in the early years, scientific knowledge was extracted from there only with great difficulty, and often at serious risk to life and limb. Obtaining any result, however small, in Antarctica is far harder than in a research laboratory, or a field experiment in kinder conditions. Scientific expeditions such as Wilson's must be regarded in this light.

Indeed the very business of survival in Antarctic conditions was part of the scientific experimentation. The following words were written for the Antarctic geologist Douglas Mawson, but they could perhaps apply as well to Dr Wilson:

> "The work demanded of him – by his own character – now needed wider skills not only to make the best use of an entirely new kind of 'laboratory', but also to learn how to survive in it. A new responsibility would thus arise: to record experiences and observations of a more general value to humanity."[65]

Certainly the journey undertaken by Wilson and his party demonstrated quite startlingly the sorts of extremes which men can survive, if they are determined enough. This alone, though not the object of the expedition, could be called a scientific success. As Drygalski wrote of his own expedition in 1904, "It contributed to the sum total knowledge of human endeavour, and should be judged on those grounds."[66]

It is also interesting to speculate how each of these expeditions contributed to the continuation of Antarctic science. The British Antarctic Expedition 1910-13, of which Wilson's work was a part, was one of a "series of competing national expeditions"[67] in which Empire, discovery, and heroic acts of exploration played more of a role than science. Indeed Sir Clements Markham, the driving force behind both Scott's expeditions, claimed that their main purpose was "the encouragement of maritime enterprise, and to afford opportunities for young naval officers to acquire valuable experiences and perform deeds of derring do".[68]

Science might not appear to have great prominence in such a scheme. But Markham was already a man of an earlier era, more Victorian than Edwardian. He may have been the President of the Royal Geographical Society, with its emphasis on exploration – but the 1910-13 expedition was being organised by the Royal Society as well and its sights were firmly set on science. In fact the expedition had a greater emphasis on science than any

[64] Wheeler, p. 119
[65] Jacka & Jacka 1988, cited in Fogg
[66] Fogg, p.397
[67] Barr 2007, p.655
[68] Cited by Fogg, p. 116

previously: as expedition physiographer Charles Wright points out, it was **"**the first scientific expedition to the polar regions which attempted to cover so wide a field of activity," and included biologists, oceanographers, geologists, a physiographer, a petrologist, a senior meteorologist and geomagnetician, and a glaciologist in its ranks.[69] The *Terra Nova* and the Cape Evans hut were well set up with laboratories and scientific equipment, and Scott himself was a keen supporter of the scientists' work.

Spectacular scientific exploits such as Wilson, Bowers and Cherry-Garrard's trip to Cape Crozier helped capture the public imagination, even if they did not yield spectacular results. The focus of Antarctic expeditions was beginning to change from discovery to science, particularly after the South Pole was finally taken by Amundsen. Charles Wright again makes the point: "Antarctic exploration became an exciting and patriotic thing for the wealthy to spend their money on and at the same time the influence of naval men in Antarctic expeditions waned… many expeditions were run by men who were primarily scientists."[70]

Still, patriotism remained important, even in science, and it was not until the middle of the twentieth century that international ventures such as the Norwegian-British-Swedish Expedition (1949-52) paved the way for international co-operation in scientific research[71]. By the time Balham and his companions examined the penguins at Cape Crozier in 1957 that co-operation had taken a dramatic new turn. Twelve countries – including Cold War enemies the U.S. and U.S.S.R. – were taking part in the International Geophysical Year, sharing techniques and results in a way which could not have been dreamed of in Wilson's day.[72]

Both these factors – scientific exploration and international cooperation – were involved in the New Zealand government's decision to retain Scott Base, initially intended as a temporary fixture, at the end of the IGY.[73] The spring journeys, including the trip to Cape Crozier, can be said to have contributed to that success of that scientific exploration.

[69] Charles Wright, in introduction to Wilson's Diaries (1972)
[70] *ibid*, p.128
[71] Barr, p. 675-677
[72] Hansom & Gordon, p. 183
[73] Helm & Miller, pp. 411-412

CONCLUSION

These two journeys cast a fascinating light on two eras of polar history. The 46 years that separate them brought inevitable changes in technology and scientific purpose.

And yet what is most striking about them is their similarity. In both cases keen scientists supported by enthusiastic laymen wanted to find out as much as possible about the still mysterious Emperor penguin. Both parties were largely thwarted by Antarctica's harsh and unpredictable conditions, and were able to spend only the briefest time examining the penguins; though both did bring back three eggs. Both expeditions were side trips, carried out just before a push to the South Pole.

Ayres' expedition is now closer in time to Wilson's than it is to the present day. And yet it is notable how little some aspects of Antarctic field work have changed, even now. This year's GCAS group camped at Windless Bight in Scott polar tents, anchored from the elements as always with blocks of snow. We sank into soft snow at Windless Bight, and slithered over the hard blue ice of the Ice Shelf. We were conscious, always, of how fragile we are in the face of the forces Antarctica can so quickly muster.

As for the question of whether the 1911 and 1957 expeditions to Cape Crozier were a success, I would argue they were. Neither party learned much about Emperor penguins. But they learned a lot about other aspects of Antarctic travel, not to mention the value of companionship and the need to rely on others to survive.

"They were gold, pure shining, unalloyed," wrote Cherry-Garrard of his companions. "Words cannot express how good their companionship was." [74]

Balham, in a slightly less demonstrative way, agreed, noting simply that "We were a happy crowd."[75]

[74] Cherry-Garrard, p.246
[75] Antarctic Society oral history recording, Ron Balham, 1997

APPENDIX: DOG TRIALS

Dog team in action (photo by Ron Balham)

Probably the most significant difference in the two expeditions to Cape Crozier, apart from the time of year, was the fact that the Ayres party used dogs to haul their sledges, while the Wilson party pulled their own (this was a form of masochism restricted largely to the Heroic Age).

The 1957 TransAntarctic Expedition was in fact the last time that dogs were used as a serious means of transport in Antarctica. Mechanised transport took over, and times changed: it became unacceptable to kill seals for dog food. Dogs remained on the ice for a few years, mainly for recreational sledging, and the last of them were withdrawn in the 1990s.

The dogs were far from easy to handle, especially for novices. Fortunately both Ayres and Douglas had some expertise, though far less than George Marsh, the TAE doctor and official dog-handler. But as Neil Sandford points out, these were days of "on the job training"[76], and there was no better way to learn dog sledging than to go on an expedition.

Sandford recounts his memories of working with the dogs:

[76] email from Neil Sandford, 7 February 2008

> "Handling dogs is rather like bringing up children.You have to be boss with firm, fair and strict discipline, drawing a definite line in the sand. They are smart enough to know they relied on us for food so formed a strong bond and team spirit. They became rather upset if they weren't able to do your bidding. We (dogs and humans) soon learnt to get along and of course were soon able to pick the leaders etc for their various strengths and weaknesses. If the lead dog played up a short stint at the rear of the team soon straightened him out. They were very order conscious. The Lead dog had to maintain his position as boss of the team. During a fight the rest would often set on the leader - the survival of the fittest instinct.
>
> "Occasionally it was necessary to resort to corporal punishment, always administered with anything except your hand as the hand was the symbol of friendship…
>
> "Murray Douglas's team was a bunch of leftovers and misfits. However he eventually moulded them into a very good team. The Crozier Trip was their first real work out away from Base. The lead dog was slack but all he had to do was follow Harry's team… They went quite well considering and were much improved by the trip. We had several pups, some less than 1 year old. When we stopped for a rest the pups would lie down for a couple of minutes then be up playing!! The older dogs would look at them with disdain… 'silly kids'!
>
> "[The dog called] Whitey, or Whitenose would be looking as though he was pulling his heart out while maintaining about an inch of slack in his harness! All we had to do was lay the whip alongside him and he would work for a while. He was old and had arthritis so was retired after this trip (without pension) to live around the Base with the next generation of pups. He was cunning as he had a distinct hind leg limp. One day Herb Orr[77] said 'watch this'. We peered around the corner of the hut, there was Whitey frolicking with the pups without a care in the world. We stepped out and as soon as he saw us back came the limp….cunning.
>
> "Contrary to some opinions you could lay down amongst them and they would enjoy the company but were treated strictly as working dogs. They certainly appreciated praise when they had done well." [78]

The dogs generally caused few problems, though this was due largely to the men keeping them separated as much as possible to avoid fights. As soon as the sledging party stopped the sledge would have to be anchored and the dogs attached to a wire span, held down with steel spikes, to keep them apart. A pound of frozen pemmican would then be thrown to each dog, and would vanish in a couple of gulps. The process in the morning was the reverse, made more "hair-raising"[79] by the rested dogs' keenness to get away. More than one spirited dash was needed catch up with them after they got away from their handlers.

[77] IGY technical officer
[78] email from Neil Sandford, 7 February 2008
[79] *ibid*

There was also the risk of a sledge overturning if the dogs got away, and smashing itself to pieces if the terrain were rough.

Commands were bellowed Labrador Eskimo, because that was the language used by famous sledger Gino Watkins in about 1925:[80] "Whit! Whit!" to go ahead, "Auk! Auk!" for left, "Rrrrrr!" for right and "Ahhh!" to stop.

Balham and Ayres' dogs were called Bonzo, Blue, Rose, Skinny, Porridge, Patch, Tiger, Hobo, and Snow; the other team included Quett, Glenn, Spike, Rollo, Tom, Whitey, and three whose names are now lost to history.

While dog sledging may now seem quaint and outmoded it is worth noting that the dogs could travel in conditions such as very thin ice or bad sastrugi which would stop mechanized transport, and that they could be run for the cost of one block of pemmican per dog per day.[81]

[80] Bernie Gunn, *Dog Sledging*, http://www.rosssea.info/polar_travel.html
[81] *ibid*

BIBLIOGRAPHY

Antarctic Society oral history recording, Ron Balham, 29 September 1997. Interviewer Julia Bradshaw

Balham, R. W., diary (unpublished)

Barr, S. (2007). Norwegian-British-Swedish Antarctic Expedition (1949-1952). In B. Riffenburgh (ed), *Encyclopedia of the Antarctic.* Vol. 2 (pp. 675-677), New York: Routledge.

Carlson, C.S. (2006). *Report on IPY Consultative Forum.* Australia, Hobart, 8 July, 2006.

Cherry-Garrard, Apsley. *The Worst Journey in the World*, Constable and Company Ltd, 1922 (also Pimlico ed., 2003)

Fogg, G. E., *A History of Antarctic Science*, Cambridge University Press, 1992

Gunn, Bernie. *Dog Sledging*, http://www.rosssea.info/polar_travel.html

Hansom, J. D., & Gordon, J.E. *Antarctic Environments and Resources: A Geographical Perspective.* UK: Addison Wesley Longman Limited, 1998

Helm, A. S., & Miller, J. H., *Antarctica*, Government Printer (NZ), 1964

Hillary, Edmund Percival, *No Latitude for Error*, Hodder & Stoughton, 1961

King, Harry (ed.), *South Pole Odyssey, Selections from the Antarctic Diaries of Edward Wilson*, Blandford Press, 1982

Sandford, H. N., diary (unpublished)

TransAntarctic Expedition Ross Sea Committee Newsletter No. 20, 1 October 1957

Wheeler, Sara. *Cherry*, Random House NY, 2002

Wilson, E. A., *Diary of the Terra Nova Expedition to the Antarctic*, Blandford Press, 1972